

CEDAR RIVER WATERSHED EDUCATION CENTER

CASCADIA REGION GREEN BUILDING COUNCIL



FLOOR SPACE: 10,000 ft² plus 4,000 ft² covered outdoor space
BUDGET: \$4.7 million construction for site and buildings
BUILDING POPULATION: 3 full-time and 2 seasonal staff, volunteers;
visitors estimated at 30,000 annually
CONSTRUCTION DATES: 2000-2001

OWNER: Seattle Public Utilities
PROJECT MANAGER: Marie Ruby
ARCHITECT: Jones & Jones
LANDSCAPE ARCHITECT: Jones & Jones
GENERAL CONTRACTOR: Berschauer Phillips Construction Co.
LANDSCAPE CONTRACTOR: SH Landscapes
STRUCTURAL ENGINEER: Pai Lin Engineering
MECHANICAL ENGINEER: DeMontigny Engineers
CIVIL AND SANITARY ENGINEER: Anne Symonds & Associates
ELECTRICAL ENGINEER: Coffman Engineers

PROJECT NOTES

SITE AND WATER

- **Ecological repair and enhancement:** A constructed stream and restored native plant communities support aquatic and terrestrial wildlife, and display the role that soil, plants, fungi, mosses and microbes play in purifying water.
- **Stormwater:** Living roofs juxtaposed to metal roofs demonstrate the natural filtering capacity of soil and the role of plants in water retention to delay runoff. Rainwater is captured to demonstrate reuse, and is displayed in artful basins and employed to play "rain drums."
- **Site protection:** Historic mature maples in the cultural landscape were aggressively protected during construction. Minimal clearing was carefully executed, and salvaged woody debris was used for mulch.
- **Water conservation:** Irrigation uses non-potable sources. Waterless urinals reduce water use and wastewater burden.
- **History:** Foundations from an abandoned railroad power station incorporated into the project and interpreted for the public.
- The site and buildings create an integrated experience of discovery, functioning as a full-scale ecological design exhibit.

ENERGY AND ATMOSPHERE

- **Heating and cooling:** Wood-framed operable windows provide natural cross-ventilation, and generous overhangs protect against summer overheating. Efficient, simple forced-air heating systems make use of preexisting electrical infrastructure. Cooling is limited to humidity control to protect valuable artifacts and documents in archival storage.
- **Insulation:** Structural insulated headers span the window and door openings. Exposed ceiling framing is insulated with steam-expanded polystyrene panels, eliminating thermal bridging. Advanced wall-framing houses blown-in cellulose insulation. Fly ash concrete floors are insulated and sized to minimize daily indoor temperature variations.
- **Night sky:** Exterior lighting is kept low to the ground, and set at minimal levels to enable visitors to experience the stars and darkness of the night sky.
- **Transportation:** The center is connected by path system to a major regional trail hub. Staff use bicycles to commute between administrative headquarters and the facility.

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PROJECT NOTES (CONT.)

MATERIALS AND RESOURCES

- **Lumber:** 98% of wood products originated from third-party-certified sustainable forests.
- **Recycled materials:** Products with recycled content include mastic cellulose insulation used in all cavity walls for thermal and acoustic insulation, plastic/wood-composite decking and site furnishings, plastic toilet partitions and vanities.
- **Concrete:** All structural and finish concrete contains a minimum of 25% fly ash.
- **Salvaging:** Salvaged Douglas fir flooring was installed. Reused utility poles were used for parking lot barriers and salvaged logs were made into light and parking bollards and benches.
- **Design:** Exposed framing and building dimensions were designed to minimize material use and waste.
- **Local natural materials:** Boulders, trees and mosses were carefully collected from the surrounding forest roadsides.

INDOOR ENVIRONMENTAL QUALITY

- **Materials:** Earth-based and plant-based materials of wood, stone, and concrete were used, and buildings were designed to use minimal finish materials in both indoor and outdoor gathering places.
- **Finish materials:** Predominantly wood interiors were finished with penetrating water-based finishes, including trusses, exposed interior framing and certified plywood sloped ceilings. Formaldehyde-free medium-density fiberboard was used for select flat finish ceilings. Phenolic resin-impregnated kraft paper countertops were used for much of the cabinetry in lieu of plastic laminate.
- **Flooring:** Carpet with natural fiber pad used instead of glue-down synthetic products.
- **Ventilation:** Occupant-controlled operable windows provide ventilation and maximize indoor comfort.

The Cedar River Watershed is the primary source of water for Seattle and more than two-thirds of King County. Seattle Public Utilities manages the more than 90,000 acres of the upper river basin to balance water quality and quantity, and to protect the drinking water quality the watershed is closed to the general public. In 2000, the watershed was designated as an ecological reserve through the city of Seattle's Habitat Conservation Plan. The environmental education center located immediately adjacent to the watershed was built to interpret and ensure future protection of this precious resource.



Jones & Jones Architects and Landscape Architects took up the challenge of designing a campus and landscape that would reflect the importance of the watershed and the relationship between the city and the larger environment that supports it. The project team and client stipulated that design and construction would need to display a high value for natural resources, using the most sustainable, low-impact building techniques.



TEACHING WITH WATER

The area receives well over 60 inches of precipitation a year. Wherever possible, falling rain is displayed, and its natural flow path demonstrated. The metal and earthen roofs are models of both paved and pervious surfaces' effects on water flow, with water gushing from the metal surfaces, in contrast to the absorptive and slow-release function of the planted earth covering.

The education center is built around a created "spring"; it bubbles into a stream and runs through a progression of rivulets and marshes through the Forest Court, flows under part of the building, and presents itself to arriving visitors as a pool in the Entry Court. The stream collects the surface drainage as well as the roof waters that are allowed to drop their full height from the broad building eaves. In addition, drainage from the parking lots is channeled into bioswales planted with wetland shrubs that will slow and clean the water before it reaches the lake.

RECALLING THE PAST, FITTING THE PLACE





With small building volumes, simple post and beam construction, wood siding, stone foundations, and the sheltering roof overhangs, the complex is meant to evoke the previous historic settlement on which it was built, and resonate with the surrounding forest and mountain landscape. The low profile of the buildings and nestling among vegetation minimizes the visual impact from the lake below.

By connecting to the site's past, the surrounding landscape and the regional context, the integrated site and buildings teach the profound interaction between the natural world and human needs. Installed art abstracts principles of nature and mirrors them back with unexpected surprises: rain drops beat with the rhythms of the world and tree roots suspended overhead collect light like water. The exhibits, the learning labs and the site as a classroom can enhance the ecological literacy of the future caretakers of our water resources.





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